

REMARKS

The claims are 1-3. Claim 1 has been amended to correct a typographical error. No new matter is raised.

Drawing Objections

Figure 1 was objected to as having an improper left margin. Applicant assumes that the Office Draftsman meant the top margin, as Figure 1 is oriented in landscape and the left margin, when viewed in landscape, appears to be appropriate.

A new Figure 1 is enclosed which is believed to have the correct margins. Withdrawal of the objection is respectfully solicited.

Rejections under 35 USC §103

Claims 1-3 stand rejected as unpatentable over Davidson in view of Yamasa and Wickman. Applicants respectfully disagree, and submit that the combination of references is improper and, even if proper, fails to meet the limitations recited in the claims.

The claims recite an LMDS system having an antenna with multiple antenna radiating elements, wherein the antenna elements are adjusted in phase and amplitude to mitigate radiation above the horizon and to decrease attenuation in power as a function of distance. Claim 2 further recites that the antenna elements are adjusted in phase and amplitude to mitigate nulls between lobes of combined radiated signals. Claim 3 further recites that the antenna elements are adjusted in phase and amplitude to reduce excess power signal at the near range to the antenna. For the reasons stated below, Applicants submit that this combination of features is not taught or suggested by the art of record, alone or in combination.

Davidson is noted for its disclosure of a LMDS system having an antenna. However, as noted by the Office, Davidson fails to teach or disclose that the antenna has multiple antenna radiating elements; fails to teach or disclose that the multiple elements are in adjusted in phase or amplitude, and fails to disclose or suggest that the multiple elements

are adjusted in phase and amplitude to (a) mitigate radiation above the horizon or (b) decrease attenuation in radiated power as a function of distance from the antenna. In fact, Davidson does not even mention radiation above the horizon and certainly does not identify that phenomenon as a problem to be addressed or corrected. Davidson does mention a decrease in signal strength as a function of distance, but addresses that issue by changing the modulating order while maintaining an adequate bit error rate. *See* Column 9, lines 37-48 and Column 10, lines 1-16. Accordingly, Applicants submit that Davidson itself does not suggest any modification to address either radiation above horizon or loss of signal strength as a function of distance.

The Office has cited and relied upon Yamasa and Wickman for their respective teachings of adjusting power level, which, in Yamasa, involves adjustment of multiple antenna elements and, in Wickman, involves use of an attenuator. It is noted that Yamasa teaches a satellite system, where radiation above the horizon is not an issue. Nor would it appear that Yamasa is concerned with preventing power loss as a function of distance as between subscribers in a particular area. Certainly, Yamasa is concerned with having enough signal power to reach the earth, but the distance between subscribers in a particular site is insignificant and thus of no concern to Yamasa in terms of power loss. In any event, it is already noted that Davidson has designed around the signal loss and it is thus no longer a concern to a skilled artisan starting with Davidson's system.

Accordingly, contrary to the Office position, Yamasa cannot be applied for anything more than it actually teaches or suggests. Certainly, Yamasa discloses multiple radiating antenna elements and suggests that they can be adjusted in phase and amplitude. However, there is no disclosure, teaching or suggestion anywhere in Yamasa that would lead a skilled artisan to utilize these features in Davidson because neither reference even so much as mentions radiation above the horizon, identifies it as a problem, or describes how phase and amplitude adjustment might mitigate such radiation.

For these reasons, Applicants submit that the combination effected by the Office is directed at modifications designed to address problems that neither reference identifies nor suggests. As neither reference identifies above-horizon radiation as an issue, it is

only with hindsight that they can be read to suggest a means of addressing or mitigating such radiation. Thus, the combination of Yamasa and Davidson is improper. Even if proper, however, the combination would not suggest having the antenna elements adjusted in phase and amplitude to address a problem, namely radiation above horizon, that neither reference even mentions.

The Office reliance on Wickman suffers from the same flaws as its reliance on Yamasa. Specifically, Wickman fails to teach or suggest multiple antenna elements, or adjusting such elements in phase and amplitude, or adjusting the elements to (a) mitigate above horizon radiation or to (b) decrease attenuation in radiated power with distance. Indeed, as noted by the Office, Wickman uses an attenuator to give correct input frequency to the frequency converter device. The use of an attenuator, contrary to the Office position, indicates that Wickman does not decrease attenuation of radiated power by adjusting the phase and amplitude of the antenna elements, as required by the present claims.

Thus, Applicants submit that the combination of Wickman and Davidson is improper because neither reference suggests the combination, because the skilled artisan lacks motivation to combine the references, and because the combination is directed at solving problems that neither reference even mentions or suggests. Applicants further submit that the combination, even if proper, fails to teach or suggest adjusting the phase and amplitude of radiating antenna elements to mitigate above horizon radiation or to decrease attenuation of radiated power at distance from the antenna.

Reconsideration and withdrawal of the rejection of claim 1 is respectfully solicited.

Claims 2 and 3 are dependent upon and further limit claim 1, and are believed to be allowable as claims dependent from an allowable base claim. In addition, these claims are patentable over the combination of references in any event. With respect to claim 2, Wickman teaches the use of an attenuator to provide correct input level into the frequency converter. Yamasa teaches the use of hybrid matrix amplifiers to minimize power loss. Neither of these disclosures even remotely suggests, let alone teach,

adjusting multiple antenna elements in phase and amplitude to mitigate nulls between lobes as required in claims 2.

Claim 3 further requires that the antenna elements be adjusted in phase and amplitude to reduce excess power near range. Wickman teaches the use of an attenuator to provide correct input power level to the frequency converter. Yamasa mentions having a “predetermined amplitude distribution” and “predetermined phase distribution” for the output ports, but does not teach or suggests that these predetermined distributions could or should be used to reduce excess power near range.

Reconsideration and withdrawal of the rejection of claims 2 and 3 is respectfully solicited.

Conclusion

For the reasons advanced, the application is believed to be in condition for allowance and a Notice of Allowance is respectfully requested.

Respectfully submitted,

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VERSION MARKED TO SHOW CHANGES

The changes made are indicated below, wherein deleted text indicated in strikethrough font and added text is double underlined.

1 (Amended). A local multipoint distribution service system having an antenna for transmitting a signal of reused frequency within a specified range from the antenna, the antenna having multiple radiating antenna elements, each of the antenna elements being adjusted in phase and in amplitude of radiated signal across the ~~radiationg~~ radiating elements to mitigate radiation above the horizon, and each of the antenna elements being adjusted in phase and in amplitude of radiated signal therefrom to decrease attenuation in radiated power with distance from the antenna.

